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10/774,844	02/10/2004	Kimio Ozawa	Q79750	9488

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,844	OZAWA, KIMIO	
	Examiner	Art Unit	
	PHYOWAI LIN	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 19 March 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-41 is/are pending in the application.

4a) Of the above claim(s) 1,3,5,7,15,17,19,21,24,26,28,30,33,35,37 and 39 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 2,4,6 and 8-14,16,18,20,22,23,25,27,29,31,32,34,36,38,40 and 41 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 02/10/2004 and 02/07/2008.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II in the reply filed on March19, 2008 is acknowledged. Group II, which includes **claims 2, 4, 6, 8-14, 16, 18, 20, 22, 23, 25, 27, 29, 31, 32, 34, 36, 38, 40 and 41** are now examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The references listed in the Information Disclosure Statement filed on 02/10/2004 and 02/07/2008 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 4, 23, 27, 32, 36 and 41** are rejected under 35 U.S.C. 102(e) as being anticipated by Scarth et al. (US Patent Number 6996323).

Regarding to claims 4, 27 and 36, Scarth et al. disclose an optical power control apparatus comprising:

a demultiplexer which receives a multiplexed optical signal obtained by multiplexing optical signals having different wavelengths, one channel being allocated for each, and demultiplexes the multiplexed optical signal into the optical signals having different wavelengths corresponding to the respective channels (see column 6, lines 45-48 and FIG.5 where in a demultiplexer inherently exists inside the microcontroller box 560 which receives the WDM input 580 having multiplexing optical signals with different wavelength corresponding to the respective channels);

demultiplexed signal level detectors set (plurality of optical tap couplers 501-508) in the channels, respectively, for detecting the power levels of the optical signals (see column 6, lines 47-49 and FIG.5);

an optical signal detector (an optical signal detector inside optical measured power at an eVOA 715) for deciding whether or not the power level of each optical signal detected by the demultiplexed signal level detector set in each channel is lower than the lowest level of an received optical signal to detect optical signal input with respect to each channel (see column 6, lines 47-49; column 8, lines 9-11; column 8, lines 49-54; FIG.5 and FIG.7 where in the optical signal detector inside the optical measure power device 715 measures the power level of each demultiplexed signal into an eVOA and decides whether or not each channel signal is lower than the received target power level Ptarget);

signal level adjusting sections set (eVOA 520-555) in the channels, respectively, for adjusting the levels of the optical signals of the respective channels demultiplexed by the demultiplexer (see column 7,lines 1-14 and FIG.5);

a multiplexer (multiplexer 595) for multiplexing the optical signals of the respective channels, which have passed through the signal level adjusting sections (see column 7,lines 14-17 and FIG.5); and

a signal level adjusting section controller (microcontroller 960) which controls the respective signal level adjusting sections so as to attenuate the level of the optical signal of the channel where no optical signal input has been detected by the optical signal detector to the greatest extent possible (see column 9, lines 59-62; column 10, lines 4-7; column 10, lines 20-25; FIG.5 and FIG.9 where in optical detector inside the optical measured power device 915 detects power signal level at one of the eVOA and if there is loss-of-signal is detected, the microcontroller 950 will set the eVOA to a maximum attenuation level).

Regarding to claim 23, Scarth et al. disclose everything claimed as applied above (see claim 4). In addition, Scarth et al. disclose the apparatus further includes: an adjusted optical signal detector (optical tap couplers 309-316) for detecting optical signals which have been adjusted by the signal level adjusting sections (see column 5,lines 35-40; column 5,lines 49-53 and FIG.3 where in optical tap couplers 309-316 which detect optical signal power at the output of each eVOAs 320-355), respectively; and a signal level adjusting section failure finder which determines that a failure has

occurred in the signal level adjusting sections when the adjusted optical signal detector has detected no optical signal after the optical signal detector detected optical signal input (column 9, lines 9-11, column 9, lines 35-40; FIG.3 and FIG.8 where in optical tap couplers inside the optical measured power device 815 detects optical power signal at the output of the eVOA and if the loss-of-signal is detected by optical tap couplers, that means the failure is occurred in the eVOA adjusting device as no optical signal is entered into the eVOA adjusting device).

Regarding to claims 32 and 41, Scarth et al. disclose an optical power control method comprising:

a demultiplexing step for receiving a multiplexed optical signal obtained by multiplexing optical signals having different wavelengths, one channel being allocated for each, and demultiplexing the multiplexed optical signal into the optical signals having different wavelengths corresponding to the respective channels (see column 6, lines 45-48 and FIG.5 where in a demultiplexer inherently exists inside the microcontroller box 560 which receives the WDM input 580 having multiplexing optical signals with different wavelength corresponding to the respective channels);

a demultiplexed signal level detecting step for detecting the power levels of the optical signals of the respective channels demultiplexed at the demultiplexing step (see column 6, lines 47-49 and FIG.5);

an optical signal detecting step for deciding whether or not the power level of each optical signal detected at the demultiplexed signal level detecting step is lower than the lowest level of an received optical signal to detect optical signal input with

respect to each channel (see column 6, lines 47-49; column 8, lines 9-11; column 8, lines 49-54; FIG.5 and FIG.7 where in the optical signal detector inside the optical measure power device 715 measures the power level of each demultiplexed signal into an eVOA and decides whether or not each channel signal is lower than the received target power level);

a signal level adjusting step for adjusting the signal level so as to attenuate the level of the optical signal of the channel where no optical signal input was detected at the optical signal detecting step to the greatest extent possible (see column 9, lines 59-62; column 10, lines 4-7; column 10, lines 20-25; FIG.5 and FIG.9 where in optical detector inside the optical measured power device 915 detects power signal level at one of the eVOA and if there is loss-of-signal is detected, the microcontroller 950 will set the eVOA to a maximum attenuation level);

a multiplexing step for multiplexing the optical signals of the respective channels which have undergone the signal level adjusting step (see column 7,lines 14-17 and FIG.5);

an adjusted optical signal detecting step for detecting optical signals which were adjusted at the signal level adjusting step (see column 5,lines 35-40; column 5,lines 49-53 and FIG.3 where in optical tap couplers 309-316 which detect optical signal power at the output of each eVOAs 320-355).

a signal level adjustment failure finding step for determining that a failure occurred in the adjustment carried out at the signal level adjusting step when no optical signal was detected at the adjusted optical signal detecting step after optical signal input

had been detected at the optical signal detecting step (column 9, lines 9-11, column 9, lines 35-40; FIG.3 and FIG.8 where in optical tap couplers inside the optical measured power device 815 detects optical power signal at the output of the eVOA and if the loss-of-signal is detected by optical tap couplers, that means the failure is occurred in the eVOA adjusting device as no optical signal is entered into the eVOA adjusting device).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 2, 9, 12, 25 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Bierman et al. (US Pub Number 2004/0109661).

Regarding to claims 2, 25 and 34, Scarth et al. disclose an optical power control apparatus (see FIG.5) comprising:

a multiplexer (multiplexer 595) for multiplexing two or more optical signals having different wavelengths (see column 7, lines 14-17 and FIG.5);

an optical signal transmitting section including a plurality of channels for transmitting optical signals each having a different wavelength, respectively, to the multiplexer, which allows at least part of each optical signal to leak into a channel for an optical signal having another wavelength in at least part of the channels (see column 6

,lines 47-56 and FIG.5 wherein plurality of channels 581-588 which have different wavelength to the multiplexer);

an optical signal transmission detector (an optical tap coupler 501) for detecting the presence or absence of optical signals transmitted through their respective proper channels in the optical signal transmitting section (see column 6, lines 48-49 and FIG.5 wherein optical tap coupler 501 detects the optical channel signal power at the inputs to the variable optical attenuator in the optical signal transmitting section); and

attenuators set in the channels of the optical signal transmitting section (see FIG.5 where in plurality of attenuators (eVOAs 520-555) in the optical signal transmitting section);

Even though Scarth et al. disclose the multiplexer, optical transmission detector for detecting the optical channel signal power at the inputs to the variable optical attenuator and attenuators set for optical power control apparatus, Scarth et al. fail to specifically disclose attenuators set in the channels of the optical signal transmitting section respectively, for increasing the insertion loss in the channel where no optical signal transmission has been detected by the optical signal transmission detector so that the insertion loss in the channel becomes greater than the insertion loss that occurs when transmitting a proper optical signal.

Bierman et al. disclose when no input optical signal is detected by the optical detector, which will provide more adjustment of the VOA attenuation so that the insertions loss attenuation in the channel will be increased as well (see paragraphs

[0013]; [0010] lines 12-14,FIG.4 and FIG.7 where in attenuation response 410 increases the insertion loss attenuation increasing as well).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. with the teaching of Bierman et al. for recognizing when no input optical signal is detected; the inserting loss attenuation will increase by more adjusting of the VOA attenuation because it would allow the optical power control steps of the attenuator achieving when to adjust the attenuating state so that it can avoid from higher insertion loss caused by VOA.

Regarding to claims 9 and 12, Scarth et al. disclose everything claimed as applied above (see claim 4). In addition, Scarth et al. disclose the apparatus further includes: an adjusted signal level detector (an attenuated signal level detector) (optical coupler 309) for detecting the power level of the optical signal which has passed through the signal level adjuster (see column 5, lines 35-40; column 5,lines 49-53 and FIG.3 where in optical tap coupler 309 which detects optical signal power at the output of eVOA 320); and a signal level adjustment controller (an insertion loss controller) (microcontroller 860 for controlling eVOA) for controlling the adjustment of signal level performed by the signal level adjuster so that the power level of each optical signal detected by the adjusted signal level detector becomes a prescribed value (see column 9,lines 9-11; column 9,lines 20-22; column 9,lines 35-58; FIG.3 and FIG.8 where in microcontroller 860 controls the each eVOA signal level and optical power signal output from the eVOA is detected by the optical tap coupler inside the optical measured power

device 815 and becomes prescribed value as loss-of-signals, valid power measurement and so on).

Scarth et al. does not specifically disclose a signal level adjuster capable of increasing the insertion loss to such level that an input optical signal is substantially shut off.

Bierman et al. disclose when no input optical signal is detected by the optical detector, which will provide more adjustment of the VOA attenuation so that the insertions loss attenuation in the channel will be increased as well (see paragraphs [0013]; [0010] lines 12-14,FIG.4 and FIG.7 where in attenuation response 410 increases the insertion loss attenuation increasing as well).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. with the teaching of Bierman et al. for recognizing when no input optical signal is detected; the inserting loss attenuation will increase by more adjusting of the VOA attenuation because it would allow the optical power control steps of the attenuator achieving when to adjust the attenuating state so that it can avoid from higher insertion loss caused by VOA.

8. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Shimomura et al. (US Pub Number 2002/0126372).

Regarding to claim 16, Scarth et al. disclose everything claimed as applied above (see claim 4). However, Scarth et al. fail to specifically disclose wherein the

demultiplexer and the multiplexer are formed of arrayed waveguide gratings, respectively.

Shimomura et al. disclose plurality of optical variable attenuators 251-254 are inserted into the optical transmission lines 131-134 between optical demultiplexer 120 and multiplexer 140 which are made of array waveguide grating type (see paragraphs [0233];[0234] lines 1-6 and FIG.23).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. with the teaching of Shimomura et al. so as to implement the array waveguide grating typed optical multiplexer and demultiplexer inside Scarth et al.'s optical multiplexer and demultiplexer device because Scarth et al. is relatively silent about the specific detail of optical multiplexer and demultiplexer device and Shimomura et al. speak into the silent with more detail about how to actually implement the optical multiplexer and demultiplexer device.

9. **Claims 6, 29 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Shimokawa et al. (US Patent Number 6445471).

Regarding to claims 6, 29 and 38, Scarth et al. disclose an optical power control apparatus comprising:

a demultiplexer which receives a multiplexed optical signal obtained by multiplexing optical signals having different wavelengths, one channel being allocated for each, and demultiplexes the multiplexed optical signal into the optical signals having different wavelengths corresponding to the respective channels (see column 6, lines 45-

48 and FIG.5 where in a demultiplexer inherently exists inside the microcontroller box 560 which receives the WDM input 580 having multiplexing optical signals with different wavelength corresponding to the respective channels);

an optical signal detector (an optical signal detector inside optical measured power at an eVOA 715) for deciding whether or not the power level of the optical signal detected by the wavelength-specific signal level detector (optical coupler 501) with respect to each wavelength is lower than the lowest level of an received optical signal to detect optical signal input in each channel (see column 6, lines 47-49; column 8, lines 9-11; column 8, lines 49-54; FIG.5 and FIG.7 where in the optical signal detector inside the optical measure power device 715 measures the power level of each demultiplexed signal detected by optical coupler 501 at the eVOA and decides whether or not each channel signal is lower than the received target power level Ptarget);

signal level adjusting sections (eVOA 520-555) set in the channels, respectively, for adjusting the levels of the optical signals of the respective channels demultiplexed by the demultiplexer (see column 7,lines 1-14 and FIG.5);

a multiplexer (multiplexer 595) for multiplexing the optical signals of the respective channels, which have passed through the signal level adjusting sections (see column 7,lines 14-17 and FIG.5); and

a signal level adjusting section controller (microcontroller 960) which controls the respective signal level adjusting sections so as to attenuate the level of the optical signal of the channel where no optical signal input has been detected by the optical signal detector to the greatest extent possible (see column 9, lines 59-62; column 10,

lines 4-7; column 10, lines 20-25; FIG.5 and FIG.9 where in optical detector inside the optical measured power device 915 detects power signal level at one of the eVOA and if there is loss-of-signal is detected, the microcontroller 950 will set the eVOA to a maximum attenuation level).

Even though Scarth et al. disclose the optical communication apparatus includes the functions of the demultiplexer, the optical signal detector, the wavelength-specific signal level detector, the signal level adjusting sections, the multiplexer and the signal level adjusting section controller, Scarth et al. fail to specifically disclose a spectrum analyzer for analyzing the spectrum of the multiplexed optical signal before being demultiplexed by the demultiplexer and a wavelength-specific signal level detector for detecting the power levels of the optical signals of the respective channels based on the analysis result obtained by the spectrum analyzer.

Shimokawa et al. disclose a spectrum analyzer (optical spectrum analyzer 1209) for analyzing the spectrum of the multiplexed optical signal before being demultiplexed by the demultiplexer and a wavelength-specific signal level detector (PD 1208) for detecting the power levels of the optical signals of the respective channels based on the analysis result obtained by the spectrum analyzer (see column 2, lines 13-26 and FIG.3 where in optical spectrum analyzer 1209 analyzes peak power of the optical signals before demultiplexed by a AWG 1206 and PD 1208 also detects the power level of the output signals demultipexed by the AWG which has been analyzed by spectrum analyzer 1209 and both signals are output to the CPU 1210 for controlling the attenuator 1203).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. with the teaching of Shimokawa et al. so as to implement the spectrum analyzer 1209 and PD 1208 before and after the optical demultiplexer (AWG) inside the optical power control apparatus system because it would allow the system analyzing the incoming power level of optical signals before the incoming optical power signal being passed through the attenuation control stages.

10. **Claims 10 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Shimokawa et al. (US Patent Number 6445471) as applied to claim 6, respectively, above and further in view of Bierman et al. (US Pub Number 2004/0109661).

Regarding to claims 10 and 13, Scarth et al. and Shimokawa et al. disclose everything claimed as applied above (see claim 6). In addition, Scarth et al. disclose the apparatus further includes: an adjusted signal level detector (an attenuated signal level detector) (optical coupler 309) for detecting the power level of the optical signal which has passed through the signal level adjuster (see column 5, lines 35-40; column 5,lines 49-53 and FIG.3 where in optical tap coupler 309 which detects optical signal power at the output of eVOA 320); and a signal level adjustment controller (an insertion loss controller) (microcontroller 860 for controlling eVOA) for controlling the adjustment of signal level performed by the signal level adjuster so that the power level of each optical signal detected by the adjusted signal level detector becomes a prescribed value (see column 9,lines 9-11; column 9,lines 20-22; column 9,lines 35-58; FIG.3 and FIG.8

where in microcontroller 860 controls the each eVOA signal level and optical power signal output from the eVOA is detected by the optical tap coupler inside the optical measured power device 815 and becomes prescribed value as loss-of-signals, valid power measurement and so on).

Scarth et al. does not specifically disclose a signal level adjuster capable of increasing the insertion loss to such level that an input optical signal is substantially shut off.

Bierman et al. disclose when no input optical signal is detected by the optical detector, which will provide more adjustment of the VOA attenuation so that the insertions loss attenuation in the channel will be increased as well (see paragraphs [0013]; [0010] lines 12-14,FIG.4 and FIG.7 where in attenuation response 410 increases the insertion loss attenuation increasing as well).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. and Shimokawa et al. with the teaching of Bierman et al. for recognizing when no input optical signal is detected; the inserting loss attenuation will increase by more adjusting of the VOA attenuation because it would allow the optical power control steps of the attenuator achieving when to adjust the attenuating state so that it can avoid from higher insertion loss caused by VOA.

11. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Shimokawa et al. (US Patent Number 6445471) as applied to claim 6, respectively, above and further in view of Shimomura et al. (US Pub Number 2002/0126372).

Regarding to claim 18, Scarth et al. and Shimokawa et al. disclose everything claimed as applied above (see claim 6). However, they both fail to specifically disclose wherein the demultiplexer and the multiplexer are formed of arrayed waveguide gratings, respectively.

Shimomura et al. disclose plurality of optical variable attenuators 251-254 are inserted into the optical transmission lines 131-134 between optical demultiplexer 120 and multiplexer 140 which are made of array waveguide grating type (see paragraphs [0233];[0234] lines 1-6 and FIG.23).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. and Shimokawa et al. with the teaching of Shimomura et al. so as to implement the array waveguide grating typed optical multiplexer and demultiplexer inside Scarth et al.'s optical multiplexer and demultiplexer device because Scarth et al. is relatively silent about the specific detail of optical multiplexer and demultiplexer device and Shimomura et al. speak into the silent with more detail about how to actually implement the optical multiplexer and demultiplexer device.

12. **Claims 8, 11, 14, 22, 31 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Kawasaki et al. (US Patent 6288836) and Bierman et al. (US Pub Number 2004/0109661).

Regarding to claims 8, 31 and 40, Scarth et al. disclose an optical power control apparatus comprising: a demultiplexer which receives a multiplexed optical signal obtained by multiplexing optical signals having different wavelengths, one channel being allocated for each, and demultiplexes the multiplexed optical signal into the optical signals having different wavelengths corresponding to the respective channels (see column 6, lines 45-48 and FIG.5 where in a demultiplexer inherently exists inside the microcontroller box 560 which receives the WDM input 580 having multiplexing optical signals with different wavelength corresponding to the respective channels);

signal level adjusting sections set (eVOA 520-555) in the channels, respectively, for adjusting the levels of the optical signals of the respective channels demultiplexed by the demultiplexer (see column 7,lines 1-14 and FIG.5);

a multiplexer (multiplexer 595) for multiplexing the optical signals of the respective channels, which have passed through the signal level adjusting sections (see column 7,lines 14-17 and FIG.5).

Even though Scarth et al. disclose the optical communication apparatus includes the functions of the demultiplexer, the signal level adjusting sections, the multiplexer Scarth et al. fail to specifically disclose a supervisory signal receiver for receiving a

supervisory signal indicating whether there is transmission of at least part of the optical signals of the respective channels which form the multiplexed optical signal input to the demultiplexer and a signal level adjusting section controller which controls the respective signal level adjusting sections so as to attenuate the level of the optical signal of each channel to the greatest extent possible when the supervisory signal receiver has determined that no optical signal was transmitted to the channel.

Kawasaki et al. disclose a supervisory signal receiver (supervising circuit 56) for receiving a supervisory signal indicating whether there is transmission of at least part of the optical signals of the respective channels which form the multiplexed optical signal (see column 8, lines 42-53 and FIG.13 where in the supervising circuit 56 can detect the supervisory signal which indicates whether or not the numbers of optical signal channels being presented in the WDM optical signals and supplies the detected signal channels to a control circuit 54 for the variable optical attenuator 28).

Bierman et al. disclose an apparatus for controlling attenuation for variable optical attenuator, when there is a loss is detected from incoming signal power, the attenuation controller will control the attenuator device to higher attenuation (see paragraph [0013] lines 1-6).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. with the teachings of Kawasaki et al. and Bierman et al. so as to implement the supervising circuit of Kawasaki et al. inside the apparatus of Scarth et al. and Kawasaki et al. because both Scarth et al. and Kawasaki et al. are relatively silent about whether or not optical signal channels are

being presented inside the WDM signals and Kawasaki et al. teach into the silent with more detail about how to actually detecting the optical signal channels are being presented or not.

Regarding to claims 11 and 14, Scarth et al., Kawasaki et al. and Bierman et al. disclose everything claimed as applied above (see claim 6). In addition, Scarth et al. disclose the apparatus further includes: an adjusted signal level detector (an attenuated signal level detector) (optical coupler 309) for detecting the power level of the optical signal which has passed through the signal level adjuster (see column 5, lines 35-40; column 5,lines 49-53 and FIG.3 where in optical tap coupler 309 which detects optical signal power at the output of eVOA 320); and a signal level adjustment controller (an insertion loss controller) (microcontroller 860 for controlling eVOA) for controlling the adjustment of signal level performed by the signal level adjuster so that the power level of each optical signal detected by the adjusted signal level detector becomes a prescribed value (see column 9,lines 9-11; column 9,lines 20-22; column 9,lines 35-58; FIG.3 and FIG.8 where in microcontroller 860 controls the each eVOA signal level and optical power signal output from the eVOA is detected by the optical tap coupler inside the optical measured power device 815 and becomes prescribed value as loss-of-signals, valid power measurement and so on).

Scarth et al. does not specifically disclose a signal level adjuster capable of increasing the insertion loss to such level that an input optical signal is substantially shut off.

Bierman et al. disclose when no input optical signal is detected by the optical detector, which will provide more adjustment of the VOA attenuation so that the insertions loss attenuation in the channel will be increased as well (see paragraphs [0013]; [0010] lines 12-14,FIG.4 and FIG.7 where in attenuation response 410 increases the insertion loss attenuation increasing as well).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. Scarth et al. with the teachings of Kawasaki et al. and Bierman et al. for recognizing when no input optical signal is detected; the inserting loss attenuation will increase by more adjusting of the VOA attenuation because it would allow the optical power control steps of the attenuator achieving when to adjust the attenuating state so that it can avoid from higher insertion loss caused by VOA.

Regarding to claim 22, Scarth et al., Kawasaki et al. and Bierman et al. disclose everything claimed as applied above (see claim 8). In addition, Kawasaki et al. disclose wherein the supervisory signal receiver is an OSC (Optical Server Channel) terminator that terminates an OSC signal (see column 8, lines 42-53 and FIG.13).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al. with the teachings of Kawasaki et al. and Bierman et al. so as to implement the supervising circuit of Kawasaki et al. inside the apparatus of Scarth et al. and Kawasaki et al. because both Scarth et al. and Kawasaki et al. are relatively silent about whether or not optical signal channels are

being presented inside the WDM signals and Kawasaki et al. teach into the silent with more detail about how to actually detecting the optical signal channels are being presented or not.

13. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Scarth et al. (US Patent Number 6996323) in view of Kawasaki et al. (US Patent 6288836) and Bierman et al. (US Pub Number 2004/0109661) as applied to claim 8, respectively, above and further in view of Shimomura et al. (US Pub Number 2002/0126372).

Regarding to claim 20, Scarth et al., Kawasaki et al. and Bierman et al. disclose everything claimed as applied above (see claim 8). However, they both fail to specifically disclose wherein the demultiplexer and the multiplexer are formed of arrayed waveguide gratings, respectively.

Shimomura et al. disclose plurality of optical variable attenuators 251-254 are inserted into the optical transmission lines 131-134 between optical demultiplexer 120 and multiplexer 140 which are made of array waveguide grating type (see paragraphs [0233];[0234] lines 1-6 and FIG.23).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to combine Scarth et al., Kawasaki et al. and Bierman et al. with the teaching of Shimomura et al. so as to implement the array waveguide grating typed optical multiplexer and demultiplexer inside Scarth et al.'s optical multiplexer and demultiplexer device because Scarth et al. is relatively silent about the specific detail of optical multiplexer and demultiplexer device and Shimomura et al.

speak into the silent with more detail about how to actually implement the optical multiplexer and demultiplexer device.

Citation of Pertinent Prior Art

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a) Yang et al. (US Pub Number 2003/0053750)

(b) Ishizuka et al. (US Pub Number 2003/0081283)

(c) Sekine (US Pub Number 2003/0190166)

(d) Nishino (US Patent Number 6594046).

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHYOWAI LIN whose telephone number is (571)270-1659. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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